

从 3750 MLS 到 3850 MQC 的 QoS 配置变化

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Introduction

本文档介绍 3750 多层交换 (MLS) 服务质量 (QoS) 与思科 Catalyst 3850 交换机模块化 QoS CLI (MQC) QoS 之间的基本区别，并通过配置示例提供有关变化的详细信息。本文档仅适用于有线 QoS。本文档面向负责设计、实施或管理包括一台独立版思科 Catalyst 3850 交换机或思科 Catalyst 3850 交换机堆叠（下称“交换机”）的网络的网络专业人员。

Prerequisites

Requirements

Cisco 建议您了解以下主题：

- [Cisco IOS 软件](#)
- MLS 和 MQC QoS 的概念和术语

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

3750 MLS QoS 与 3850 MQC QoS 之间的差异概述

由于实施 MQC (通用 QoS 配置模型) 配置而非 3750 和 3560 系列交换机中旧的 MLS QoS (取决于平台的 QoS 配置) 命令, 3850 系列中的 QoS 配置已经获得改进。



2K/3K
(2960/3750)



NG3K
(3650/3850)

下表重点列出了主要差异：

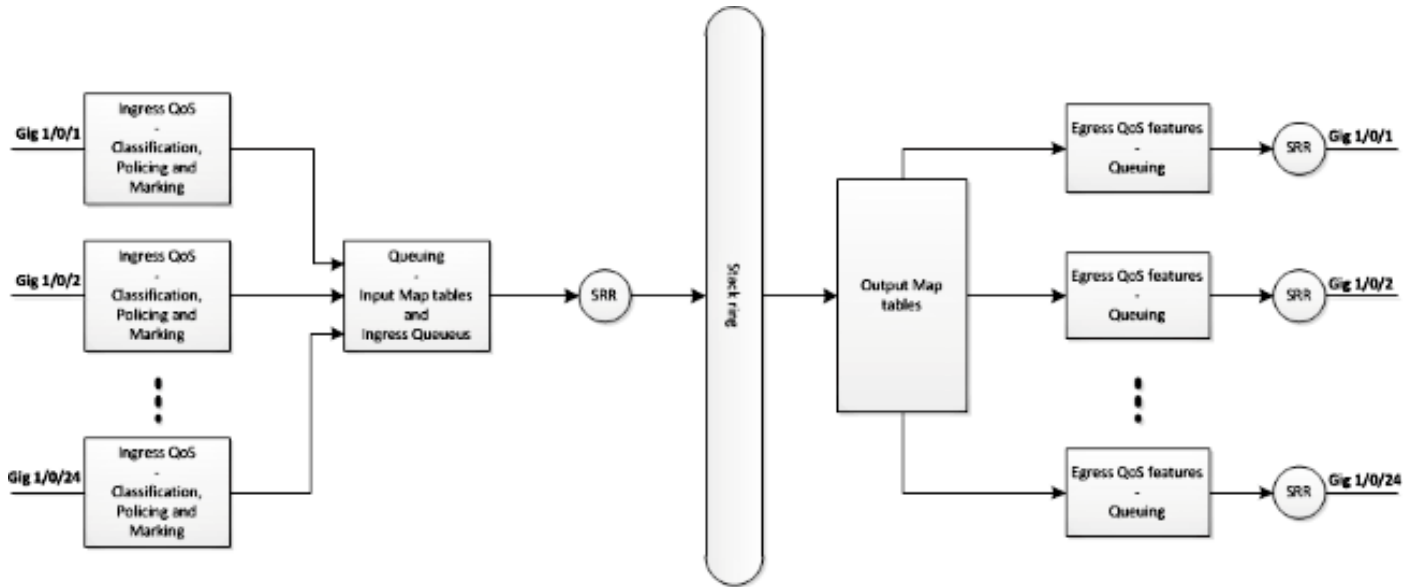
交换机类型	3750	3850
基本架构	MLS	MQC
QoS 默认设置	禁用	启用
全局配置	支持 MLS QoS 在入口支持部分 MQC	不支持 MLS QoS 支持 MQC [class-map、policy map]
接口配置	支持 MLS QoS 配置并在入口支持部分 MQC CLI	将策略附加到接口
端口信任默认设置	禁用	启用
入口端口	分类/管制/标记/ 队列	分类/管制/标记 [无入口队列!]
出口端口	队列	分类/管制/标记/队列
入口交换机虚拟接口 (SVI)	分类/管制/标记	分类/标记
出口 SVI	无	分类/标记

认识到 QoS 方法的主要根本性改变很重要。

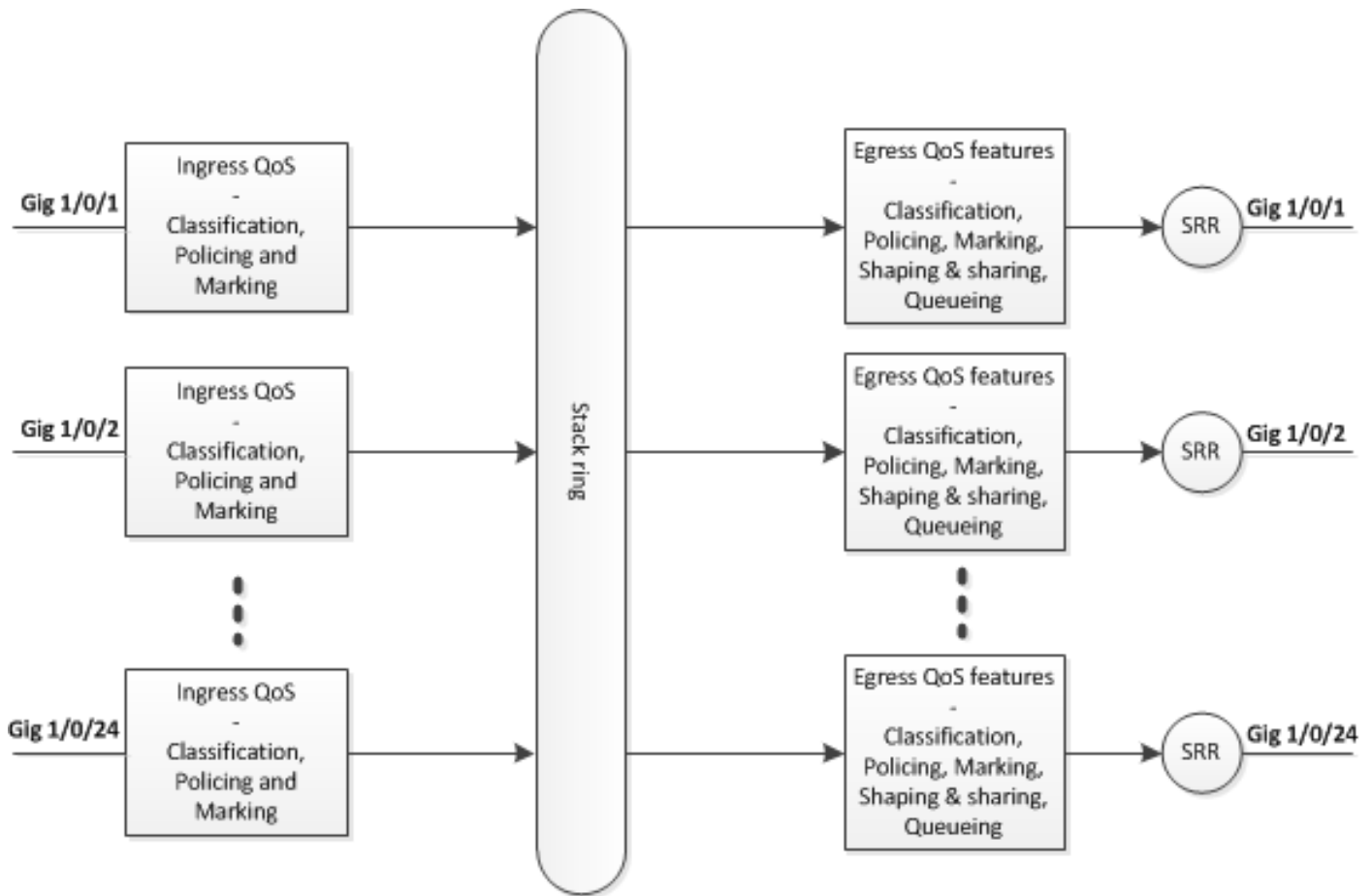
QoS 在 3750 上默认禁用, 而在 3850 上则默认启用。而且, 要保留 3750 平台上的第 2 层 (L2)/第 3 层 (L3) QoS 标记, 还必须应用信任配置。

在 3850 上, 默认信任所有数据包 (保留 L2/L3 QoS 标记), 除非您在入口或出口接口上应用特定的策略映射来更改此设置。

3750 QoS 模型



3850 QoS 模型



功能详情比较表

入口

功能	3750	3850
分类	Class-map 匹配差分服务代码点 (DSCP)、优先级 (Prec)、访问控制列表 (ACL) 既支持 match-all 也支持 match-any	Class-map 匹配服务类别 (CoS)、Prec、DSCP、ACL 和 VLAN 仅支持 match-any
标记 [[无条件设置]	设置 DSCP 和 Prec	设置 CoS、Prec、DSCP 和 QoS 组
标记 [[有条件标记]	DSCP 突变	类默认设置为表映射
管制	1r2c	1r2c 和 2r3c
管制标记降级	管制超限将降级标记 [仅支持 DSCP]	管制超限和违反将降级标记 [支持 CoS、DSCP、Prec]
汇聚管制	支持	汇聚管制 [HQoS 的一种类型]
入口队列	仅在 3750 上支持，但在 3750x 上不支持	不支持
分级 QoS (HQoS)	仅基于 VLAN 的 HQoS	基于端口的汇聚管制和每 VLAN (PV)

出口

功能	3750	3850
对非排队操作的分类支持	不支持	CoS、Prec、DSCP、QoS 和 VLAN
对排队操作的分类支持	CoS 和 DSCP	CoS、Prec、DSCP 和 QoS
标记	不支持	设置 CoS、Prec 和 DSCP
管制	不支持	1r2c、2r3c，通过表映射
最大队列数和队列类型	1P3Q3T [4 个队列] 加速队列 -> 优先级队列	2P6Q3T [最多 8 个队列]
出口队列	共享模式，整形模式、队列限制、优先级和队列缓冲区	带宽、剩余带宽、整形、HQoS：汇聚管制、PV、
HQoS	不支持	

常用 QoS Show 命令

3750

输入 show 命令：

```
show run class-map [name_of_class-map]
show run policy-map [name of policy-map]
show policy-map int [interface_name]
```

常规 show 命令：

```
show mls qos maps
show mls qos maps <options>
show mls qos queue-set
show mls qos interface [interface_name] queuing
show platform port-asic stats drop [interface_name] statistics
show mls qos aggregate-policer
```

```

show run class-map [name_of_class-map]
show run policy-map [name_of_policy-map]
show table-map [name_of_table-map]
show run policy-map [name_of_policy-map]
show policy-map int [interface_name]
show platform qos policies port sw [sw#]
show platform qos queue config interface_type [interface_name]
show platform qos queue stats interface_type [interface_name]
    
```

从 3750 到 3850 的 QoS 变化示例

QoS 配置	3750 [[全局]	3750 [[接口]	3850 *
QoS 禁用	No MLS QoS	两个队列 控制 -> 队列 (2) 数据 -> 队列 (4)	出口无策略 控制 -> 队列 (1) 数据 -> 队列 (2)
在入口和出口信任或设置 基于入口的排队操作 信任或设置	MLS QoS	a) MLS QoS trust CoS b) MLS QoS trust DSCP c) 输入策略，将操作设置为标记 DSCP 值 d) 无 MLS QoS 信任配置 [CoS/DSCP 均设置为零]	对 CoS 进行出口 对 DSCP 进行出口 对 DSCP 进行出口 输入策略和类默认
CoS/DSCP 队列映射	MLS QoS Shaped Round Robin (SRR)-queue output [CoS- map/ DSCP- map]	A、b、c 和 d 将使用相应的新映射	输出显式分类 [C
DSCP 突变	MLS QoS DSCP 突变	接口需要配置 MLS QoS trust DSCP MLS QoS DSCP-mutation [名称]	接口输入策略和
汇聚管制	MLS QoS 汇 聚管制	需要接口级配置	汇聚管制 [HQoS
管制标记降级	MLS QoS map policed- DSCP [10] [11] to [63] MLS QoS queue-set output [1] threshold [1] [100] [100] [50] [200] 1 -> 队列设置 1 <1-> 队列 1 阈值 1	管制策略附加到接口，超限不丢弃，全局管制的 DSCP 将生效 [输入]	一个表映射用于管 [输入和输出]
队列限制		配置队列设置 [2] [默认设置为队列设置 1]	出口排队策略与排

队列缓冲区	阈值 2 保留的缓冲区 最大阈值 MLS QoS queue-set output [1] buffers [15] [25] [40] [20]	接口配置队列设置	策略映射与队列挂
共享/带宽	MLS QoS	接口级配置 “srr-queue bandwidth share 1 30 35 5”[共享模式]	策略映射中的带宽
优先级队列 [加速队列]	MLS QoS	在接口级配置“priority-queue out”，这将使相应队列设置的第 1 个队列成为优先级队列	策略映射中的优先
整形器	MLS QoS	SRR 队列带宽整形 [整形模式]	策略映射中的整形
端口整形器	MLS QoS	SRR 队列带宽限制	端口整形器
HQoS	MLS QoS	SVI [将策略附加到 SVI] 并且接口需要配置“MLS PV 策略 QoS VLAN_based”	策略映射中的整形器 并将策略附加到转

示例 1 : QoS 禁用

3750 (全局配置)	3750 (接口)	3850
No MLS QoS	两个队列 [控制为一个队列 2，数据为一个队列 4]	出口无策略 [控制数据包进入队列 1，数据包进入队列 2]

3750

```

3750#show mls qos
QoS is disabled <- disable
QoS ip packet dscp rewrite is enabled

3750#show mls qos interface gig1/0/1 statistics | b output queues enqueued
output queues enqueued:
queue: threshold1 threshold2 threshold3
-----
queue 0: 4 0 0
queue 1: 0 0 0 <- control
queue 2: 0 0 0
queue 3: 0 0 0 <- data

output queues dropped:
queue: threshold1 threshold2 threshold3
-----
queue 0: 0 0 0
queue 1: 0 0 0 <- control
queue 2: 0 0 0
queue 3: 0 0 0 <- data

Policer: Inprofile: 0 OutofProfile: 0

```

3850

```

3850#show ru int gig1/0/1
interface GigabitEthernet1/0/1
end

3850#show platform qos queue config gigabitEthernet 1/0/1 sw 1
DATA Port:21 GPN:1 AFD:Disabled QoSMap:0 HW Queues: 168 - 175
DrainFast:Disabled PortSoftStart:1 - 600
-----
DTS Hardmax Softmax PortsMin GlblSMin PortStEnd
-----
0 1 5 120 6 480 0 0 0 0 0 800 <- control
1 1 4 0 7 720 2 480 2 180 2 800 <- data
2 1 4 0 5 0 0 0 0 0 0 800
3 1 4 0 5 0 0 0 0 0 0 800
4 1 4 0 5 0 0 0 0 0 0 800
5 1 4 0 5 0 0 0 0 0 0 800
6 1 4 0 5 0 0 0 0 0 0 800
7 1 4 0 5 0 0 0 0 0 0 800
Priority Shaped/shared weight shaping_step
-----
0 0 Shared 50 0
1 0 Shared 75 0
2 0 Shared 10000 179
3 0 Shared 10000 0
4 0 Shared 10000 0
5 0 Shared 10000 0
6 0 Shared 10000 192
7 0 Shared 10000 0

Weight0 Max_Th0 Min_Th0 Weigth1 Max_Th1 Min_Th1 Weight2 Max_Th2 Min_Th2
-----
0 0 478 0 0 534 0 0 600 0
1 0 573 0 0 641 0 0 720 0
2 0 0 0 0 0 0 0 0 0
3 0 0 0 0 0 0 0 0 0
4 0 0 0 0 0 0 0 0 0
5 0 0 0 0 0 0 0 0 0
6 0 0 0 0 0 0 0 0 0
7 0 0 0 0 0 0 0 0 0

```

示例 2 : QoS 启用信任 COS

3750 (全局) 3750 (接口)

MLS QoS 接口配置“MLS QoS trust CoS” (基于默认的 CoS 到队列设置 1 映射)

3850

基于 CoS 的出口队列策略 (入口需要信任 CoS)

3750

```

Global config:
3750(config)#mls qos

```

```

Interface config:
interface GigabitEthernet1/0/1
mls qos trust cos

```

Related show cli:


```
3750#sh mls qos
QoS is enabled
QoS ip packet dscp rewrite is enabled
```

```
3750#sh mls qos int gig1/0/1
GigabitEthernet1/0/1
trust state: trust cos
trust mode: trust cos
trust enabled flag: ena
COS override: dis
default COS: 0
DSCP Mutation Map: Default DSCP Mutation Map
Trust device: none
qos mode: port-based
```

```
3750 #show mls qos maps cos-output-q
Cos-outputq-threshold map:
cos: 0 1 2 3 4 6 7
-----
queue-threshold: 2-1 2-1 3-1 3-1 4-1 1-1 4-1 4-1
```

Note: cos value 0 maps to 2-1 [queue-set1 : queue2 threshold 1]

3850

Ingress: apply policy-map trust-cos
Egress: create class based on cos and have queuing action for each class

```
Ingress policy:
3850#show run policy-map trust-cos
class class-default
set cos cos table default
```

```
3850#show table-map default
Table Map default
default copy
```

```
Egress policy:
3850#show run policy-map example2
class cos5
bandwidth percent 15
class cos0_1
bandwidth percent 25
class cos2_3
bandwidth percent 40
class cos4_6_7
bandwidth percent 20
```

```
3850#show run class-map cos5
class-map match-any cos5
match cos 5
```

```
3850#show run class-map cos0_1
class-map match-any cos0_1
match cos 0
match cos 1
```

```
3850#show run class-map cos2_3
```

```
class-map match-any cos2_3
match cos 2
match cos 3
```

```
3850#show run class-map cos4_6_7
class-map match-any cos4_6_7
match cos 4
match cos 6
match cos 7
```

示例 3 : QoS 启用信任 DSCP

3750 (全局) 3750 (接口)

MLS QoS 接口配置“MLS QoS trust DSCP”[基于默认的 DSCP 到队列设置 1 映射]

3850
输入默认设置为信任
DSCP
基于 DSCP 的出口队
略

3750

```
config
3750(config)#mls qos <- Global
interface GigabitEthernet1/0/1 <- Interface
mls qos trust dscp
```

```
3750#sh mls qos int gig1/0/1
GigabitEthernet1/0/1
trust state: trust dscp
trust mode: trust dscp
trust enabled flag: ena
COS override: dis
default COS: 0
DSCP Mutation Map: Default DSCP Mutation Map
Trust device: none
qos mode: port-based
```

```
3750#show mls qos maps dscp-output-q
```

```
Dscp-outputq-threshold map:
d1 :d2 0 1 2 3 4 5 6 7 8 9
```

```
-----
0 : 02-01 02-01 02-01 02-01 02-01 02-01 02-01 02-01 02-01 02-01
1 : 02-01 02-01 02-01 02-01 02-01 02-01 03-01 03-01 03-01 03-01
2 : 03-01 03-01 03-01 03-01 03-01 03-01 03-01 03-01 03-01 03-01
3 : 03-01 03-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01
4 : 01-01 01-01 01-01 01-01 01-01 01-01 01-01 01-01 04-01 04-01
5 : 04-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01 04-01
6 : 04-01 04-01 04-01 04-01
```

3850

Ingress: default trust dscp, no policy needed

Egress: use dscp as classification and add queuing action based on customer need

One Sample config:

```

Policy-map:
3850#show run policy-map dscp-shape
class dscp56
shape average percent 10
class dscp48
shape average percent 11
class dscp40
shape average percent 12
class dscp32
shape average percent 13
Class-map:
3850#show run class-map dscp56
class-map match-any dscp56
match dscp cs7

```

```

3850#show run class-map dscp48

class-map match-any dscp48
match dscp cs6

```

```

3850#show run class-map dscp40
class-map match-any dscp40
match dscp cs5

```

```

3850#show run class-map dscp32
class-map match-any dscp32
match dscp cs4

```

示例 4 : QoS 启用并在一个接口上设置策略

3750 (全局)	3750 (接口)	3850
MLS QoS	接口输入策略，将操作设置为标记 CoS/DSCP 值 [[标记的值将用于出口映射]	需要显式出口策略以进行队列映射

3750

```

3750#show run class-map dscp-1
class-map match-any dscp-1
match ip dscp 1

```

```

c3750#show run policy-map set-dscp-63
class dscp-1
set dscp 63

```

```

3750#show run int f7/0/2
interface FastEthernet7/0/2
mls qos trust dscp
service-policy input set-dscp-63

```

```

3750#show policy-map int f7/0/2
FastEthernet7/0/2

```

```

Service-policy input: set-dscp-63

```

```

Class-map: dscp-1 (match-any)
0 packets, 0 bytes
5 minute offered rate 0 bps, drop rate 0 bps
Match: ip dscp 1

```

```
Class-map: class-default (match-any)
0 packets, 0 bytes
5 minute offered rate 0 bps, drop rate 0 bps
Match: any
0 packets, 0 bytes
5 minute rate 0 bps
```

Note: Pkts come in interface fa7/0/2, dscp1 will be marked to dscp63 which mapping based on the existing mapping table, other pkts will retain original dscp value mapping accordingly

3850

Input will be same as 3750 config

Egress: will add queuing action under class dscp-63

One sample config:

```
3850#show run policy-map dscp63-queuing
class dscp63
bandwidth percent 50
```

```
3850#show class-map dscp63
Class Map match-any dscp63
```

```
Match dscp 63
```

示例 5 : QoS 启用并对接口禁用 MLS QoS 信任

3750 (全局)	3750 (接口)
MLS QoS	接口不配置 MLS QoS trust CoS/DSCP [[CoS/DSCP 将设置为 0]

3850
接口输入策略和类默认设置 将 DSCP 设置为 0 , 使用类 DSCP0 和队列操作设置策略

3750

```
Global:
c3750(config)#mls qos
```

```
Interface:
interface GigabitEthernet2/0/45
!
```

3850

```
Input policy:
c3850#show run policy-map example5-input
class class-default
set dscp default
```

```
Output policy:
c3850#show run policy-map example5-output
class dscp0
```

shape average percent 10 <- queuing action based on customer need

Attach to the ingress port:

```
c3850#show run int gig1/0/1
interface GigabitEthernet1/0/1
service-policy input example5-input
```

Attach to the egress port:

```
c3850#show ru int gig1/0/2
interface GigabitEthernet1/0/2
service-policy output example5-output
```

示例 6 : QoS 启用并更改 CoS/DSCP 队列映射

3750 (全局)

MLS QoS SRR 队列映射配置
(MLS QoS SRR-queue output [CoS-map queue [1] threshold [3] [4 5])

3750 (接口)

A、b、c 和 d 将使用新的映射表
[CoS 4 和 5 将映射到队列 1 阈值 3]

3850

出口显式分类和队列

3750

Before config:

```
3750#show mls qos maps cos-output-q
Cos-outputq-threshold map:
cos: 0 1 2 3 4 5 6 7
-----
queue-threshold: 2-1 2-1 3-1 3-1 4-1 1-1 4-1 4-1
```

User config mapping:

```
3750(config)#mls qos srr-queue output cos-map queue 3 threshold 3 0
```

New mapping table after config

```
3750#show mls qos maps cos-output-q
Cos-outputq-threshold map:
cos: 0 1 2 3 4 5 6 7
-----
queue-threshold: 3-3 2-1 3-1 3-1 4-1 1-1 4-1 4-1
```

3850

Input : need apply trust-cos policy:

```
3850#show run policy-map trust-cos
class class-default
set cos cos table default
```

```
3850#show table-map default
```

```
Table Map default
default copy
```

Egress policy:

Before changing mapping:

Sample config:

```
3850#show run policy-map example2
```

```
class cos5
bandwidth percent 15
class cos0_1
bandwidth percent 25
class cos2_3
bandwidth percent 40
class cos4_6_7
bandwidth percent 20
```

```
3850#show run class-map cos5
class-map match-any cos5
match cos 5
```

```
3850#show run class-map cos0_1
class-map match-any cos0_1
match cos 0
match cos 1
```

```
3850#show run class-map cos2_3
class-map match-any cos2_3
match cos 2
match cos 3
```

```
3850#show run class-map cos4_6_7
!
class-map match-any cos4_6_7
match cos 4
match cos 6
match cos 7
```

After mapping changing , corresponding sample config:

```
3850#show run policy-map example6
class cos5
bandwidth percent 15
class cos1
bandwidth percent 25
class cos0_2_3
bandwidth percent 40
class cos4_6_7
bandwidth percent 20
```

```
3850#show class-map cos5
Class Map match-any cos5 (id 25)
Match cos 5
```

```
3850#show run class-map cos1
class-map match-any cos1
match cos 1
```

```
3850#show run class-map cos0_2_3
class-map match-any cos0_2_3
match cos 0
match cos 2
match cos 3
```

```
3850#show run class-map cos4_6_7
class-map match-any cos4_6_7
match cos 4
match cos 6
match cos 7
```

示例 7 : QoS 启用和 DSCP 突变

3750 (全局)

3750 (接口)

3850

MLS QoS DSCP 突变

接口需要配置 MLS QoS trust DSCP
MLS QoS DSCP-mutation 名称 [名称在全局定义]

接口输入策略和不同 DSCP 的表

3750

Global config :

```
3750(config)#mls qos map dscp-mutation dscp-mutation 0 1 to 63
```

```
3750(config)#mls qos map dscp-mutation dscp-mutation 2 3 to 62
```

Global show cli:

```
c3750#show mls qos maps dscp-mutation
```

Dscp-dscp mutation map:

dscp-mutation:

```
d1 : d2 0 1 2 3 4 5 6 7 8 9
```

```
-----  
0 : 63 63 62 62 04 05 06 07 08 09
```

```
1 : 10 11 12 13 14 15 16 17 18 19
```

```
2 : 20 21 22 23 24 25 26 27 28 29
```

```
3 : 30 31 32 33 34 35 36 37 38 39
```

```
4 : 40 41 42 43 44 45 46 47 48 49
```

```
5 : 50 51 52 53 54 55 56 57 58 59
```

```
6 : 60 61 62 63
```

Dscp-dscp mutation map:

Default DSCP Mutation Map:

```
d1 : d2 0 1 2 3 4 5 6 7 8 9
```

```
-----  
0 : 00 01 02 03 04 05 06 07 08 09
```

```
1 : 10 11 12 13 14 15 16 17 18 19
```

```
2 : 20 21 22 23 24 25 26 27 28 29
```

```
3 : 30 31 32 33 34 35 36 37 38 39
```

```
4 : 40 41 42 43 44 45 46 47 48 49
```

```
5 : 50 51 52 53 54 55 56 57 58 59
```

```
6 : 60 61 62 63
```

Interface config:

```
interface FastEthernet7/0/3
```

```
description trust dscp
```

```
mls qos trust dscp
```

```
mls qos dscp-mutation dscp-mutation
```

```
c3750#show mls qos int f7/0/3
```

```
FastEthernet7/0/3
```

```
trust state: trust dscp
```

```
trust mode: trust dscp
```

```
trust enabled flag: ena
```

```
COS override: dis
```

```
default COS: 0
```

```
DSCP Mutation Map: dscp-mutation
```

```
Trust device: none
```

```
qos mode: port-based
```

Interface using default dscp-table:

```
c3750#show mls qos int g3/0/1
```

```
GigabitEthernet3/0/1
```

```
trust state: not trusted
```

```
trust mode: not trusted
```

```
trust enabled flag: ena
COS override: dis
default COS: 0
DSCP Mutation Map: Default DSCP Mutation Map
Trust device: none
qos mode: port-based
```

3850

Ingress : apply policy with dscp table-map
Egress: classify on new dscp value with queuing action

```
Ingress:
3850#show table-map dscp-2-dscp
Table Map dscp-2-dscp
from 0 to 63
from 1 to 63
from 2 to 62
from 3 to 62
default copy
3850#show run policy-map example7-input
class class-default
set dscp dscp table dscp-2-dscp

Egress:
3850#show run policy-map example7-output

class dscp63
shape average percent 20 [ queuing action based on the user need]
class dscp62
shape average percent 30 [queuing action based on user need]
```

示例 8 : MLS QoS 启用和汇聚管制

3750 (全局)

MLS QoS 汇聚管制

[所有使用汇聚管制的类将共享管制速率]

```
MLS QoS aggregate-policer agg_traffic 8000 8000
exceed-action drop
```

3750 (接口)

需要接口级配置

设置了策略的接口以 **agg_traffic** 作为汇聚管制器名称

3850

汇聚管制
(HQoS)

3750

```
Global:
mls qos aggregate-policer agg_traffic 8000 8000 exceed-action drop

Access-list:
access-list 1 permit 192.168.0.0 0.0.0.255
access-list 2 permit 10.0.0.0 0.0.0.255

Class-map:
class-map match-all agg1
match access-group 1
class-map match-all agg2
match access-group 2

Policy-map:
```



```

policy-map agg_policer
class agg1
set dscp 40
police aggregate agg_traffic
class agg2
set dscp 55
police aggregate agg_traffic

```

Note: class agg1 and agg2 will share the same policing rate

3850

Global:

```

mls qos aggregate-policer agg_traffic 8000 8000 exceed-action drop

```

Access-list:

```

access-list 1 permit 192.168.0.0 0.0.0.255
access-list 2 permit 10.0.0.0 0.0.0.255

```

Class-map:

```

class-map match-all agg1
match access-group 1
class-map match-all agg2
match access-group 2

```

Policy-map:

```

policy-map agg_policer
class agg1
set dscp 40
police aggregate agg_traffic
class agg2
set dscp 55
police aggregate agg_traffic

```

Note: class agg1 and agg2 will share the same policing rate

示例 9 : MLS 启用和管制标记降级

3750 (全局配置) 3750 (接口)

3850

MLS QoS map

policed-DSCP x to

只要接口设置了管制策略，超限会传输，全局 CLI 将生效 [仅输入]

一个表映射用于管制超限，一个表映射用

y

3750

Default policed-dscp map:

```

3750#show mls qos map policed-dscp

```

Policed-dscp map:

```

d1 : d2 0 1 2 3 4 5 6 7 8 9

```

```

-----
0 : 00 01 02 03 04 05 06 07 08 09

```

```

1 : 10 11 12 13 14 15 16 17 18 19

```

```

2 : 20 21 22 23 24 25 26 27 28 29

```

```

3 : 30 31 32 33 34 35 36 37 38 39

```

```

4 : 40 41 42 43 44 45 46 47 48 49

```

```

5 : 50 51 52 53 54 55 56 57 58 59

```

6 : 60 61 62 63

User define policed-dscp map:

```
3750(config)#mls qos map policed-dscp 0 10 18 24 46 to 8
```

```
3750#show mls qos map policed-dscp
```

Policed-dscp map:

```
d1 : d2 0 1 2 3 4 5 6 7 8 9
```

```
-----  
0 : 08 01 02 03 04 05 06 07 08 09
```

```
1 : 08 11 12 13 14 15 16 17 08 19
```

```
2 : 20 21 22 23 08 25 26 27 28 29
```

```
3 : 30 31 32 33 34 35 36 37 38 39
```

```
4 : 40 41 42 43 44 45 08 47 48 49
```

```
5 : 50 51 52 53 54 55 56 57 58 59
```

```
6 : 60 61 62 63
```

Policy config:

```
class-map match-all policed-dscp
```

```
match access-group 2
```

```
class policed-dscp
```

```
police 8000 8000 exceed-action policed-dscp-transmit
```

Attach the above policy at ingress:

Note : Mark down table can be used by policing and interface policing as long as exceed action is transmit

3850

```
3850(config)#table-map policed-dscp
```

```
3850(config-tablemap)#map from 0 to 8
```

```
3850(config-tablemap)#map from 10 to 8
```

```
3850(config-tablemap)#map from 18 to 8
```

```
3850(config-tablemap)#map from 24 to 8
```

```
3850(config-tablemap)#map from 46 to 8
```

```
3850#show table-map policed-dscp
```

```
Table Map policed-dscp
```

```
from 0 to 8
```

```
from 10 to 8
```

```
from 18 to 8
```

```
from 24 to 8
```

```
from 46 to 8
```

```
default copy
```

```
3850#show policy-map policed-dscp
```

```
Policy Map policed-dscp
```

```
Class class-default
```

```
police cir percent 10
```

```
conform-action transmit
```

```
exceed-action set-dscp-transmit dscp table policed-dscp
```

示例 10 : MLS QoS 启用和队列限制配置

3750 (全局)

MLS QoS queue-set output 1 threshold 1100

100 50 200 (队列限制)

[1 -> 队列设置 1 ,

1 -> 第一个队列 ,

100 -> 阈值 1 ,

3750 (接口)

3850

接口配置队列设置

[默认设置为队列设置 出口排队策略与排队操作和队列限制

1]

100 -> 阈值 2 ,
50 -> 保留的缓冲区 ,
200 -> 最大阈值]

3750

Global config:

```
mls qos srr-queue output cos-map queue 2 threshold 1 2
mls qos srr-queue output cos-map queue 2 threshold 2 3
mls qos srr-queue output cos-map queue 2 threshold 3 6 7
```

If no interface config, the queue-set 1 will be used:

```
3750#show mls qos queue-set 1
```

```
Queueset: 1
```

```
Queue : 1 2 3 4
```

```
-----  
buffers : 15 25 40 20
```

```
threshold1: 100 125 100 60
```

```
threshold2: 100 125 100 150
```

```
reserved : 50 100 100 50
```

```
maximum : 200 400 400 200
```

For interface config queue-set 2 explicitly:

```
3750#show mls qos queue-set 2
```

```
Queueset: 2
```

```
Queue : 1 2 3 4
```

```
-----  
buffers : 25 25 25 25
```

```
threshold1: 100 200 100 100
```

```
threshold2: 100 200 100 100
```

```
reserved : 50 50 50 50
```

```
maximum : 400 400 400 400
```

3850

(multiple class with queue-limit turn on)

```
3850#show policy-map q-limit
```

```
Policy Map q-limit
```

```
Class users-class
```

```
Queueing action ( shaper, bandwidth and bandwidth remaining)
```

```
queue-limit cos 2 percent 50
```

```
queue-limit cos 3 percent 50
```

```
queue-limit cos 6 percent 70
```

```
queue-limit cos 7 percent 70
```

Note: using the above config, cos 2 and cos 3 will be dropped earlier than cos 6 and 7

示例 11 : MLS QoS 启用和队列缓冲区配置

3750 (全局)

MLS QoS queue-set output [1]
buffers [15 25 40 20]

3750 (接口)

接口配置队列设置 [默认设置为队
列设置 1]

3850

策略映射与队列操作和队列缓冲区比率
[0-100]

3750

Default queue-buffer :

```
3750#show mls qos queue-set 1
```

```
Queueset: 1
```

```
Queue : 1 2 3 4
```

```
-----  
buffers : 25 25 25 25
```

```
threshold1: 100 200 100 100
```

```
threshold2: 100 200 100 100
```

```
reserved : 50 50 50 50
```

```
maximum : 400 400 400 400
```

User define queue-buffer:

```
mls qos queue-set output 1 buffers 15 25 40 20
```

```
3750#show mls qos queue-set 1
```

```
Queueset: 1
```

```
Queue : 1 2 3 4
```

```
-----  
buffers : 15 25 40 20
```

```
threshold1: 100 125 100 60
```

```
threshold2: 100 125 100 150
```

```
reserved : 50 100 100 50
```

```
maximum : 200 400 400 200
```

3850

```
3850#show policy-map queue-buffer
```

```
Policy Map queue-buffer
```

```
Class cos7
```

```
bandwidth percent 10
```

```
queue-buffers ratio 15
```

```
Class cos1
```

```
bandwidth percent 30
```

```
queue-buffers ratio 25
```

```
class-map:
```

```
=====
```

```
3850#show class-map cos7
```

```
Class Map match-any cos7 (id 22)
```

```
Match cos 7
```

```
3850#show class-map cos1
```

```
Class Map match-any cos1 (id 28)
```

```
Match cos 1
```

```
Attach to the interface at egress direction:
```

示例 12 : MLS QoS 启用和带宽配置

3750 (全局)

3750 (接口)

3850

MLS QoS (共享模式)

接口级配置

“SRR-queue bandwidth share 1 30 35 5”策略映射中的带宽

3750

Default share and shape mode:

```
3750-3stack#show mls qos interface gig 1/0/1 queueing
GigabitEthernet1/0/1
Egress Priority Queue : disabled
Shaped queue weights (absolute) : 25 0 0 0
Shared queue weights : 25 25 25 25
The port bandwidth limit : 100 (Operational Bandwidth:100.0)
The port is mapped to qset : 1
```

User config share mode under interface:

```
interface GigabitEthernet1/0/1
srr-queue bandwidth share 40 30 20 10
srr-queue bandwidth shape 0 0 0 0
```

```
3750#show mls qos interface gig1/0/1 queueing
GigabitEthernet1/0/1
Egress Priority Queue : disabled
Shaped queue weights (absolute) : 0 0 0 0
Shared queue weights : 40 30 20 10
The port bandwidth limit : 100 (Operational Bandwidth:100.0)
The port is mapped to qset : 1
```

3850

3850#show policy-map bandwidth

```
Policy Map bandwidth
Class cos1
bandwidth percent 40
Class cos2
bandwidth percent 30
Class cos3
bandwidth percent 20
Class class-default
bandwidth percent 10
```

3850#show class-map cos1

```
Class Map match-any cos1
```

Match cos 1

3850#show class-map cos2

```
Class Map match-any cos2
```

Match cos 2

3850#show class-map cos3

```
Class Map match-any cos3 (id 26)
```

Match cos 3

3850#show class-map cos4

```
Class Map match-any cos4 (id 25)
```

Match cos 4

示例 13 : MLS QoS 启用和优先级

3750 (全局)

MLS QoS [加速队列]

Note:加速队列与优先级队列相同

3750 (接口)

在接口级配置“priority-queue out”[使相应队列设置的第 1 个队列成为严格优先级队列]

3850

策略映射中的优
1

3750

```
interface GigabitEthernet1/0/2
priority-queue out
end
```

```
3750#show mls qos interface gig1/0/2 queueing
GigabitEthernet1/0/2
Egress Priority Queue : enabled
Shaped queue weights (absolute) : 25 0 0 0
Shared queue weights : 25 25 25 25
The port bandwidth limit : 100 (Operational Bandwidth:100.0)
The port is mapped to qset : 1
```

3850

```
3850#show run policy-map priority-queue
class cos7
priority level 1 ? strict priority
class cos1
shape average percent 10
Attach the above policy to interface at egress side:
```

示例 14 : MLS QoS 启用和整形器配置

3750

```
Default shape mode:
GigabitEthernet1/0/3
Egress Priority Queue : disabled
Shaped queue weights (absolute) : 25 0 0 0
Shared queue weights : 25 25 25 25
The port bandwidth limit : 100 (Operational Bandwidth:100.0)
The port is mapped to qset : 1
```

User define shape mode:

```
interface GigabitEthernet1/0/3
srr-queue bandwidth shape 4 4 4 4
```

```
3750-3stack#show mls qos interface gigabitEthernet 1/0/3 queueing
GigabitEthernet1/0/3
Egress Priority Queue : disabled
Shaped queue weights (absolute) : 4 4 4 4
Shared queue weights : 25 25 25 25
The port bandwidth limit : 100 (Operational Bandwidth:100.0)
The port is mapped to qset : 1
```

3850

```
3850#show policy-map shape
Policy Map shape
Class cos1
Average Rate Traffic Shaping
  cir 25%
Class cos2
Average Rate Traffic Shaping
  cir 25%
Class cos3
Average Rate Traffic Shaping
  cir 25%
Class cos4
Average Rate Traffic Shaping
  cir 25%
```

示例 15 : MLS QoS 启用和带宽

3750 (全局) 3750 (接口) 3850
MLS QoS SRR 队列带宽限制 速度、带宽

3750

```
interface GigabitEthernet1/0/4
srr-queue bandwidth limit 50
```

```
3750-3stack#show mls qos interface g1/0/4 queueing
GigabitEthernet1/0/4
Egress Priority Queue : disabled
Shaped queue weights (absolute) : 25 0 0 0
Shared queue weights : 25 25 25 25
The port bandwidth limit : 50 (Operational Bandwidth:50.0)
The port is mapped to qset : 1
```

3850

```
3850#show policy-map default-shape
Policy Map default-shape
Class class-default
Average Rate Traffic Shaping
  cir 50%
service-policy child [ queuing based on customer need]
```

示例 16 : HQoS

3750 (全局配置) 3750 (接口) 3850
Class-map、 将策略附加到 SVI
Policy-map 接口需要配置“MLS QoS vlan_based” PV 入口策略

3750

Note:

SVI: Parent [class acl based class-map->policing]

Child [class interface range class-map->marking]

Child class-map:

```
3750(config)# class-map cm-interface-1
3750(config-cmap)# match input gigabitethernet3/0/1 - gigabitethernet3/0/2
```

Child policy-map:

```
3750(config)# policy-map port-plcmap-1
3750(config-pmap)# class cm-interface-1
3750(config-pmap-c)# police 900000 9000 drop
```

Parent class-map matching acl:

```
3750(config)# access-list 101 permit ip any any
```

Parent class-map:

```
3750(config)# class-map cm-1
3750(config-cmap)# match access 101
```

```
3750(config)# policy-map vlan-plcmap
3750(config-pmap)# class cm-1
3750(config-pmap-c)# set dscp 7
3750(config-pmap-c)# service-policy port-plcmap-1
3750(config-pmap-c)# exit
3750(config-pmap)# class cm-2
3750(config-pmap-c)# service-policy port-plcmap-1
3750(config-pmap-c)# set dscp 10
```

Attach the policy to the interface:

```
3750(config)# interface vlan 10
3750(config-if)# service-policy input vlan-plcmap
```

3850

Note: Due to target change, this can't be one to one mapping, need config based on customer requirement.

Target is at port level

Parent classify on vlan

Child: none vlan classification [for example cos/dscp]

```
3850#sh run policy-map PV_parent_marking_child_policing
class vlan10
set dscp 63
service-policy child_class_dscp_policing
class vlan11
set cos 5
service-policy child_class_dscp_policing
class vlan12
set precedence 6
service-policy child_class_dscp_policing
```

```
3850#sh run policy-map child_class_dscp_policing
```



```
class dscp1
police cir percent 12
class dscp2
police cir percent 15
class dscp3
police cir percent 20
class class-default
police cir percent 22
```

```
3850#sh run class-map vlan10
class-map match-any vlan10
match vlan 10
```

```
3850#sh run class-map vlan11
class-map match-any vlan11
match vlan 11
```

```
3850#sh run class-map vlan12
class-map match-any vlan12
match vlan 12
```

```
3850#sh run class-map dscp1
class-map match-any dscp1
match dscp 1
```

```
3850#sh run class-map dscp2
class-map match-any dscp2
match dscp 2
```

```
3850#sh run class-map dscp3
class-map match-any dscp3
match dscp 3
```